

ARRL and TAPR 19th Annual Digital Communications Conference

The good news is that the 2000 version of the ARRL and TAPR Digital Communications Conference (DCC) is over... the bad news is that the 2000 DCC is over.

As conference organizers, my wife Tina and I, aided by a number of volunteers (most notably Geoffrey Dick, WA4IKQ), were intimately involved in most aspects of planning this year's DCC. As anyone who is involved in such events can tell you, there are always last-minute mini-crises that threaten (or at least seem to threaten) the success of the event, and yet it (almost always) comes together, and the attendees have a great time and learn a lot. By that standard, the 19th Annual DCC was a roaring success. I'll try to describe some of what happened at the 2000 DCC, along with some "insider" commentary.

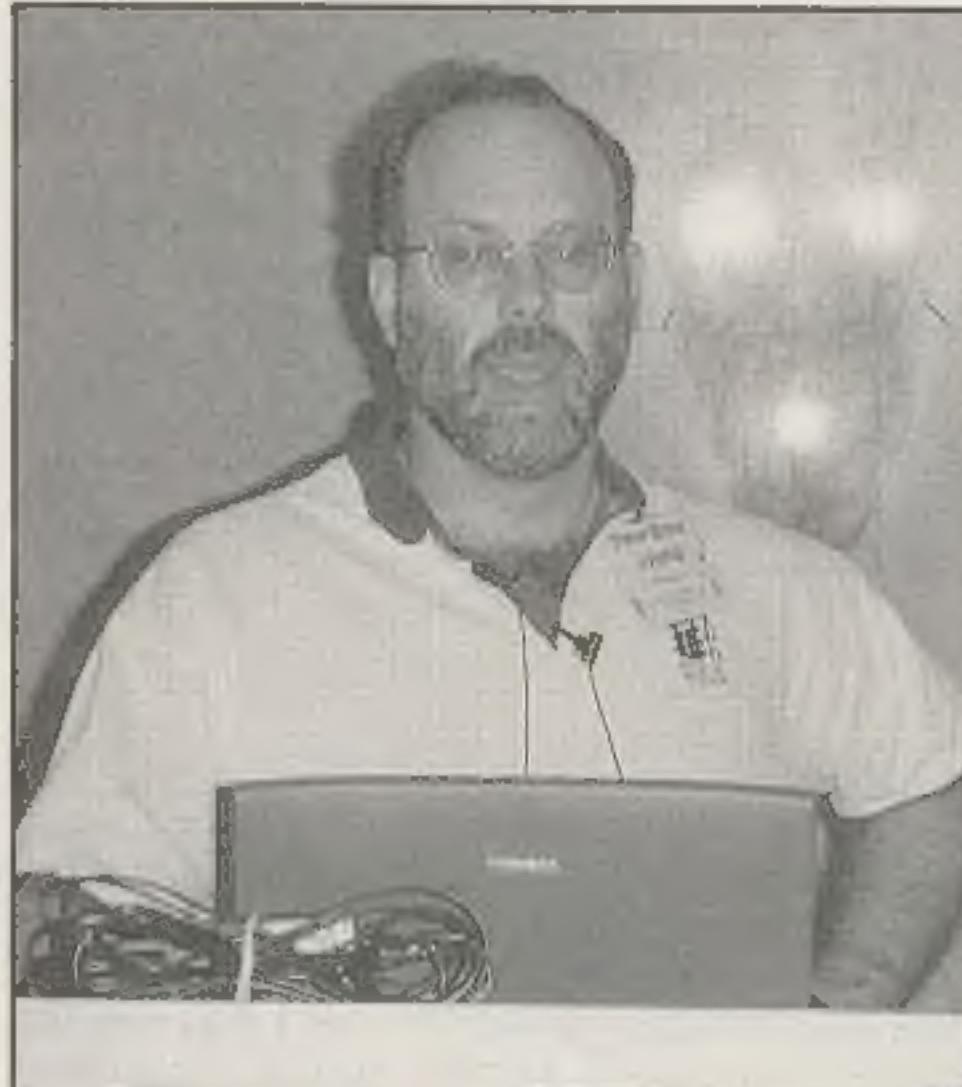
On the Agenda

The 19th DCC was held September 22–24, 2000 at the Orlando Airport Marriott Hotel in Orlando, Florida. It helps to understand the "flow" of the DCC to realize that a number of sub-events occur under the umbrella of the DCC:

- TAPR (Tucson Amateur Packet Radio, Inc.) annual Board Meeting on Friday morning
- National APRS Seminar on Friday afternoon
- Packet Radio User's Group of Japan Reception and Presentation on Friday evening
- Main Paper Presentations on Saturday morning and afternoon
- Packet Radio (and associated topics) Introductory Sessions on Saturday morning and afternoon
- TAPR Annual Meeting on Saturday afternoon
- DCC Banquet, dinner speaker, and prize drawing on Saturday evening
- Technical Seminar Sunday morning

One of the main points that I make whenever explaining about the DCC is that it's not just "dry," formal paper presentations. Mostly, the DCC is about meeting interesting people who are

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Steve Bible, N7HPR, presented his paper on Easy Trak, a PIC Based Rotor/Radio Controller Interface, during the main session of DCC 2000.

actively involved in digital wireless communications and amateur radio. I'm on record as stating that the most important "product" of the DCC is fun and learning—in that order.

Attending the DCC

One of the primary goals of the DCC is to "move it around." Roughly, the DCC follows a three-year cycle in the following "regions" of North America: East, Central, West. Each of these "regions" is very roughly defined, and the final location for each year's DCC is largely dependent on which group offers to host it. For example, DCC in 2001 will be held in Cincinnati, Ohio, and in 2002 the conference will be "West," exactly where yet to be determined.

One of TAPR's goals when it undertook the prime management role for the DCC some years ago was to try to keep the cost of the DCC at a minimum for attendees. That necessitated a bit more advance planning (and some considerable experience at such negotiations) to comparison-shop for hotels near airports (free shuttle service is a prime criterion) with decent room rates. Cost of attendee registration closely tracks the fixed expenses incurred for the DCC—room and equipment rentals, meals,

Proceedings books, etc. Any profits from the DCC are, for the most part, incidental; the financial goal of the DCC, such as it is, is to break even.

The attention to minimizing costs to attendees as much as possible, and the great reputation that the DCC has developed over the years, result in somewhere between one third and one -half of the attendees consistently traveling to the DCC wherever it is held. "Moving it around" brings in a lot of new attendees and always adds a few more to "The Traveling Road Show" contingent, as I've heard them refer to themselves.

TAPR Board Meeting

The main news from the TAPR Board Meeting, which was open to all TAPR members, is that John Ackermann, N8UR, has been elected TAPR president. N8UR had been acting-president since Greg Jones, WD5IVD, stepped down from that role earlier in the year. Steve Bible, N7HPR, was elected vice-president. Retaining their previous roles were Bob Hanson, N2GDE, as secretary and Jim Neely, WA5LHS, as treasurer. TAPR has decided to proceed with the production of the innovative PIC-based EasyTrak rotor controller.

APRS Symposium

For the last several years, the APRS (Automatic Position Reporting System) Symposium has been one of the more dynamic aspects of the DCC, and this year's was no exception. It was so successful, in fact, that next year's DCC almost certainly will feature an all-day APRS Symposium on Friday instead of only in the afternoon. Crammed into this year's APRS Symposium were 15 presentations (in 15-minute slots). Unfortunately, only a few of the APRS Symposium presentations were reflected in formal papers in the DCC *Proceedings*. It is hoped that the authors will post their presentations on the web.

PRUG Seminar

For the last several years, Packet Radio User's Group of Japan (PRUG) <<http://www.prug.or.jp>> has graciously sponsored a reception on Friday evening. PRUG then offers a presentation of

what its members have been working on in the previous year. The PRUG presentation is always well attended, and there are always a lot of follow-up questions and conversations.

PRUG was well represented this year with seven or more members attending. They gave an update on their PRUG-96 system, which they had presented at the 17th DCC in 1998. PRUG-96 was a system designed for research on routing protocols and was based on three subsystems—a 2.4 GHz spread-spectrum wireless modem, a Z-80-based controller and NE-2000 compatible Ethernet card, and a UNIX-based PC which housed the development tools and experimental builds of software which were then downloaded into the controller. PRUG-96 was so successful that the Ministry of Posts and Telecommunications (MPT), Japan's equivalent of the FCC, has provided a grant to further develop the PRUG-96 system for use in rural areas to provide low-cost wireless internet access. In addition, Root, Inc. was able to develop the spread-spectrum radio into a commercial product and now offers it for sale commercially. The PRUG-96 system has evolved into the PRUG-99 system, which attempts to bring more stability and robustness, as well as new hardware, into the PRUG-96 system.

At the DCC there was a lot of interest in a project PRUG calls TINI-AMEDES, which is a one-board (the size of a memory SIMM for personal computers) computer based on JAVA. PRUG uses the computer to interface between Ethernet and the Dallas Semiconductor 1-wire bus for experimenting with weather instrumentation, including measurement of unusual parameters such as sunlight intensity and atmospheric pollutants.

There were numerous other PRUG presentations, including some really interesting "firsts" at range and unusual conditions using 2.4 GHz spread-spectrum communications (imagine carrying a 5 foot microwave dish on a commuter train) that I can't do justice to in a column.

One of the most impressive aspects of PRUG's activities, for me, was that they are very focused on making use of spread-spectrum, IP-based technologies, and UNIX—exactly the directions I think amateur radio *ought* to be pursuing. I hope to learn more in depth about PRUG's activities and report on them in future columns. Spending time with the folks from PRUG is one of the better parts of the DCC. Those who attended this year were Hiroshi, JH4CIN; Naoto, 7L4FEP; Masao, JQ1VIE; Hiroshi,



Geoff Dick, WA4IKQ, received a plaque thanking him for his efforts on behalf of the 2000 DCC.

JJ1CEI; Yoichi; Hiroto, JJ1LYU; Shingo, JG8OOM; and Masaaki, JE1WAZ.

Main Session

Twenty-three papers were submitted in time for publication in the 19th ARRL and TAPR Digital Communications Conference *Proceedings*. The papers and presentations touch on a wide variety of digital wireless communications topics (abstracts and a complete list of topics are available online at <<http://www.tapr.org/tapr/html/Fcnc19.html>>). Steve Bible, N7HPR, presented his paper on Easy Trak, a PIC Based Rotor/Radio Controller Interface. Easy Trak is a next-generation automatic rotor controller designed to interface with a wide range of rotor systems. John Hansen, W2FS, presented his "PIC-et Radio II: How to Receive AX.25 UI Frames Using Inexpensive PIC Microcontrollers," which was a follow-on to John's presentation a year ago on how (relatively simple) it was to transmit AX.25 UI frames using a PIC. Rick Muething, KN6KB, presented "Winlink 2000... A Global Ham Message Transfer and Delivery Network," which fascinated me, and I hope to write an entire column on Winlink 2000. There were many presenters and many excellent papers. Even for those who attended, listening to the audio of the presentation is well worth the time.

DCC Audio

Greg Jones, WD5IVD, is one of the unsung heroes of the DCC (for the

moment I'll set aside Greg's very formative role in the life of the DCC in getting TAPR formally involved in its management and hands-on involvement through DCC 18). Greg's least-recognized role at the DCC is that of audio archivist for the DCC presentations. Greg pretty much single-handedly has diligently recorded and converted the audio from all recent DCC presentations and made it available via TAPR's web page. In 2000 the audio presentations will be saved as .MP3 files and made available on CD-ROM. Previous experiments at the DCC have included live and recorded streaming audio formats. Much of the "flavor" of the DCC thus can be recreated by listening to the hours of audio.

A Note About DCC Papers

Upon hearing that the main activity at the DCC is a "Presentation of Papers," the vast majority of hams instantly and incorrectly assume they certainly could never write a paper, and compound that mistake by assuming they're not "technical" enough to understand the content of the DCC papers. Nothing could be further from the truth, as the majority of DCC papers are informal and informational, and not at all "scholarly." Most of the DCC papers are written something like an article for *CQ* or *QST*. The authors use a conversational style to try to explain something they've done or something they're considering doing, or to illuminate a particularly obscure technical aspect of wireless digital communications. As far as I'm aware, no paper has ever been rejected for publication in the DCC *Proceedings* for anything other than missing the submission deadline (and you have to miss the submission deadline by a considerable margin to not be included; Maty Weinberg at ARRL HQ works wonders in assembling the DCC *Proceedings* into a coherent and logical book.).

Papers on nearly any topic in wireless digital communications are welcome. It's preferred, but very definitely not required, that the topic have some relationship to amateur radio, or illustrate a concept of which amateur radio should be aware. I've been assured that the DCC *Proceedings* can grow to any reasonable size to include any number of papers submitted.

I'm as guilty as anyone. A paper I wrote on the Puget Sound Amateur Radio TCP/IP Network was published in a DCC *Proceedings* several years ago and that was a proud moment, but I haven't written anything for the DCC



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since. I hope to correct that in 2001 and submit at least a couple of papers. I also should note that students benefit tremendously from publication of a paper in the *Proceedings*; such an achievement looks really good on an academic resume.

TAPR Annual Meeting

TAPR held its first-ever "prime time" annual meeting at DCC 2000 since combining the previously separate TAPR annual meeting and the DCC. By most accounts, the change in format appeared to be a success, allowing the membership to question and comment on TAPR's activities face to face with the TAPR board of directors. At previous DCCs, the annual meeting was held after the dinner, at a time when most of the attendees badly craved sleep, resulting in sparse attendance and not very lively discussions. A number of suggestions were well received by the board. One sad note was that former TAPR President Greg Jones, WD5IVD, announced to the membership his intention to resign from the board to be able to devote more time to completion of his doctoral thesis and spend more time with his new wife, Bridget. Greg plans to remain involved with TAPR.

Dinner Speaker and Prizes

After a great dinner attended by most of those who were at the DCC, we settled down for a very informative presentation by Doug Campbell, Vice President of Product Management, Marketing and International Business of Triton Network Systems. Triton makes broadband microwave communications systems, and

is a relatively young company located in Orlando, Florida. Doug related how he knew he should have made his presentation "more technical" when he was going through the dinner line and overheard a conversation on Fast Fourier Transforms, a welcome change from the audiences he's used to.

Doug was asked if he felt that amateur radio experience is relevant to Triton Network Systems, and he replied with a very emphatic yes, stating that one of his key challenges is finding personnel with RF experience and that several key members of Triton's technical staff are hams. More information about Triton Network Systems can be found at <<http://www.triton-network.com>>.

In 2000 there were a number of prizes donated for DCC attendees. The grand prize was a Kenwood D-700A mobile radio, which was won in a random drawing by Geoffrey Dick, WA4IKQ. Kenwood was also gracious enough to send

a quantity of nice coffee mugs with TAPR's logo on one side and Kenwood's logo on the other, enough for each attendee to receive one. Other notable prizes were a number of high-end PIC development kits and a Palm VII. The ARRL and TAPR donated a number of prizes, and CQ offered several subscriptions to CQ magazine and CQ calendars.

Sunday Technical Seminar

DCC 2000's Technical Seminar was a PIC Design Seminar organized by Steve Bible, N7HPR, with several others offering additional presentations. Attendees received design materials, including booklets and CD-ROMs.

The Fun

I'm not sure if I've gotten across the *fun* that happens at the DCC, mostly as a result of like-minded people getting together to discuss topics that are near and dear to them. Lack of sleep due to long conversations into the wee hours is a definite hazard, though. One of the most striking aspects of the DCC is that the authors very much want to help folks understand their topics. They are just incredibly helpful and understanding.

DCC 2001

DCC 2001 will be held in the Cincinnati, Ohio area, likely on September 21–23. I hope I've piqued your interest for attending next year. Updates will be posted on the TAPR DCC web page: <<http://www.tapr.org/dcc>>. If you live in the Cincinnati area and would like to get involved in DCC 2001, contact Steve Bible, N7HPR. He and his wife Sheila are the DCC 2001 coordinators. Steve can be reached at <n7hpr@tapr.org>.

73, Steve, N8GNJ

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